# Outcomes of Methadone Treatment of 300 Innercity Addicts

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ASSESSMENTS OF THE NUMBER of heroin addicts in the United States vary, but even conservative estimates place the number of untreated addicts much higher than the number of treated ones. Methadone treatment currently is the most common form of therapy for heroin addiction in the United States. An estimated 80,000 persons were receiving methadone in treatment facilities during 1971–72 (*1,2*), and an undetermined, but probably large, number of addicts were procuring methadone for self-treatment.

The effectiveness of methadone treatment has been evaluated in a number of studies (*3–10*). In some of these, special selection of patients or unusual therapeutic resources may have influenced outcomes favorably. If methadone treatment programs are to remain the dominant therapy and to be expanded, it would appear important to continue to evaluate their effectiveness—especially under conditions in which patients are not specially selected or elaborate ancillary resources are not available.

Our study evaluated effectiveness of methadone treatment for the first 300 consecutive patients enrolled in a freestanding, innercity methadone program established in 1968 by a general practitioner serving a low-income population. During the period in which these 300 patients were enrolled, only a few applicants were refused treat-

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ment; almost the sole criterion for admission to the program was a patient's request for help.

The Pittsburgh Black Action Methadone Program was patterned after that of Dole and Nyswander (*11*). During its first year, the program had a total of 28 patients; it was housed in a church basement and supported by local donations of professional services and money. In 1969 the program was expanded, and in 1970 support was obtained from the National Institute of Mental Health (NIMH).

Throughout its existence the program had both medical and social components. During the period covered by the study, a major portion of the medical activities concerned prescription and administration of methadone. Social service aspects included patient counseling about individual problems and referrals to meet social, educational, and vocational rehabilitation needs. Early in the program, social services were provided by former addicts who had no professional preparation. After the NIMH-funded program was initiated in 1970, about half the counselors were formally trained; the others were untrained ex-addicts. It was not until almost the end of the period during which observations in this study were made that the social services given were more than minimal in frequency, duration, and quality.

## Methods

Four characteristics of enrolled patients were studied: retention in the program, evidence of continued use of heroin, employment, and arrests. These characteristics were determined for patients before and after admission to the program.

Data pertaining to addicts' histories were obtained from counselors' records of a patient's admission interview. Data pertaining to the patient's experience in the program from June 1, 1969, to September 25, 1972, were obtained from clinic nurses' records and hospital records.

Data on urinalysis results were obtained from copies of reports of the Office of the Chief Toxicologist of Allegheny County, Pa. Frequency of urinalysis changed during the study period. Urinalyses were performed relatively infrequently early in the program, and some patients received no tests. In the technique used for urinalysis at that time, resin strips were placed in urine and then the drugs which had been impregnated on them were dissolved from these strips and analyzed chromatographically.

Records of each addict before and after entry into the program were searched for in the Russell Index, a public record in the district attorney's office of all persons arrested and appearing in court for any crime committed in Allegheny County, where almost all the patients resided.

Some patients began treatment during the period from August 1968 to May 1969. It is not known how many patients entered the program during this period and dropped out before June 1, 1969, when permanent recordkeeping was initiated. The 300 study patients included 90 who began taking methadone before June 1, 1969, and 210 who entered the program between that date and September 26, 1970. The 300 were divided into three successive cohorts of 100 patients in order to identify changes over time in characteristics of the incoming addict population or changes in their response to treatment. Precoded data collection forms were devised so that data processing equipment could be used.

## Preprogram Characteristics of Addicts

On admission to the methadone program, the majority of patients, 99, were in the 20- to 24-year age group. The age range was from 18 to 71 years. The second and third cohorts were slightly younger than the first. Following is the distribution of the patients by age:

| *Age group (years)* | *1st cohort* | *2d cohort* | *3d cohort* | *Total* |
|---|---|---|---|---|
| Under 20 | 3 | 10 | 14 | 27 |
| 20–24 | 29 | 35 | 35 | 99 |
| 25–29 | 19 | 21 | 19 | 59 |
| 30–39 | 25 | 25 | 15 | 65 |
| 40–49 | 15 | 8 | 15 | 38 |
| 50–59 | 2 | 0 | 0 | 2 |
| 60–69 | 0 | 0 | 0 | 0 |
| 70–79 | 1 | 0 | 0 | 1 |
| No information | 6 | 1 | 2 | 9 |
| Total | 100 | 100 | 100 | 300 |

A total of 239 patients, or 79.7 percent, were male; 59, or 20.4 percent, were female; and there was no information about the sex of 2 patients. The ratio of males to females was approximately the same in all three cohorts.

Data on race showed that 228 patients (76.3 percent) were black; 49 (16.3 percent) were white; and 1 was Mexican. There was no information about racial or national origin characteristics of 22 patients. The racial composition was approximately the same in all three cohorts.

The marital status of patients on admission to the methadone program was as follows:

| Status | 1st cohort | 2d cohort | 3d cohort | Total |
|---|---|---|---|---|
| Never married | 24 | 36 | 44 | 104 |
| Widowed | 6 | 0 | 3 | 9 |
| Divorced | 6 | 6 | 6 | 18 |
| Separated | 10 | 16 | 11 | 37 |
| Married | 34 | 39 | 30 | 103 |
| No information | 20 | 3 | 6 | 29 |

There appeared to be more "never married" patients in the second and third cohorts as compared with the first cohort, an observation consistent with the slightly older age of the first cohort.

During their first 12 years of life, 59 percent of the patients had lived in complete households (both parents at home), and 29.6 percent had lived in households with at least one parent missing. No information was available for 39 patients. A larger percentage of patients in the second and third cohorts were reared in complete households. Data on the three cohorts were as follows:

| Household status | 1st cohort | 2d cohort | 3d cohort | Total |
|---|---|---|---|---|
| Complete | 39 | 59 | 56 | 154 |
| Incomplete | 34 | 35 | 38 | 107 |
| No information | 27 | 6 | 6 | 39 |

The duration of addiction at the time of admission ranged from 1 to 30 years. The following data on the average duration of addiction indicated a decrease in the second and third cohorts, which had larger numbers of patients in the 1-to 4-year group.

| Duration of addiction | 1st cohort | 2d cohort | 3d cohort | Total |
|---|---|---|---|---|
| 1–4 years | 28 | 40 | 42 | 110 |
| 5–9 years | 26 | 28 | 29 | 83 |
| 10–19 years | 19 | 20 | 12 | 51 |
| 20–29 years | 12 | 7 | 12 | 31 |
| No information | 15 | 5 | 5 | 25 |

On admission to the program, the patients estimated their daily use of heroin as follows:

| Daily use of heroin | 1st cohort | 2d cohort | 3d cohort | Total |
|---|---|---|---|---|
| ½–1 spoon | 57 | 60 | 53 | 170 |
| More than 1 spoon | 22 | 33 | 39 | 94 |
| No information | 21 | 7 | 8 | 36 |

The second and third cohorts gave histories of heavier use than the first cohort.

Information on educational background indicated that 164 patients, or 60.5 percent, had not completed high school. Of the remainder, 81 completed high school, 26 attended college, and 2 completed college. Twenty-eight patients had enrolled in technical training programs but had not completed them; nine others had completed technical training. There appeared to be no marked differences among the educational achievements of the three cohorts.

## Experience During and After the Program

The experience of each patient was tabulated after 1 year and after 2 years in the program. These two intervals were selected in order to compare patient activities before and after admission to the program. Because satisfactory records did not exist before June 1, 1969, patients were considered as admitted on that date for evaluation purposes, although the first 90 patients had been admitted and were receiving methadone before June 1, 1969.

*Retention.* The rate of retention was as follows: after 1 year 230 patients, or 76.6 percent, were active in the program; 70 had dropped out. After 2 years, 175 remained in the program, and

**Table 1. Determinants of retention in the Pittsburgh methadone program for 300 heroin addicts**

| Determinant | Retained in program 1 year or more ($N$=230) | | Left program before 1 year ($N$=70) | | $X^2$, 1 df |
|---|---|---|---|---|---|
| | Number | Percent | Number | Percent | |
| Age 25 years or younger | 82 | 35.6 | 31 | 44.6 | 0.92 |
| Male | 178 | 77.4 | 61 | 87.3 | 1.44 |
| Black | 177 | 76.9 | 51 | 72.9 | .04 |
| Married | 87 | 37.9 | 13 | 18.5 | [1] 6.61 |
| High school graduate | 85 | 37.0 | 13 | 18.5 | [1] 5.07 |
| Addicted 10 years or less | 154 | 66.8 | 50 | 71.5 | .96 |

[1] $P = .05$.

NOTE: The number of patients classified by the various determinants differ from those given elsewhere in the paper because information on retention status of some patients was not known, and different age and addiction categories were employed in computing this table.

125 had dropped out. The retention rate did not vary greatly by cohorts. Of those dropping out within the first year after admission, 34 were mandatorily terminated, 14 elected termination, 15 were incarcerated (theft, drug violation, and prostitution charges), and no reason was given for the termination of 7.

Termination was mandatory for poor attendance, continued illegal drug use, and other activities not in keeping with program policies. It was the opinion of the staff that most patients who elected termination returned to drug use.

The association of six characteristics of the patients (age, sex, race, marital status, education, and duration of addiction) with retention in the program was determined (table 1). Married patients and those who were high school graduates had a significantly higher retention rate than those who were not married and who had less than a high school education. Retention was not associated significantly with the other patient characteristics.

Of patients dropping out after 12 months, 15 were mandatorily terminated, 32 elected termination, 3 were incarcerated, and no reason was given for the termination of 5. There was no marked difference in the reasons for termination among the three cohorts.

*Continued drug use.* During the first year after admission, only 49 patients in the first cohort had urinalyses to detect heroin metabolites, which are evidence of continued drug use. Urinalyses were performed for 76 patients in the second cohort and 86 patients in the third cohort during their first year in the program. During the first year's experience of the three cohorts, 6.4 percent of the 769 urine specimens were positive. During the patients' second year in the program, all patients had specimens tested at least once, and 6.6 percent of 2,695 specimens were positive.

*Employment.* Weeks of employment in the year before and the year following admission are shown in table 2. Information about employment before admission was lacking for 73 patients and about employment after admission for 7 patients. These 80 patients were excluded from table 2; it was assumed that their experience was similar to that of the patients for whom information was available. Tabulations were also made in which all members of the cohort were used as the denominator. This inclusion had the effect of classifying the "no information" patients as "other than employed." Both methods of calculation indicated no major changes in employment, although the proportion of patients who worked 10 to 29 weeks per year was somewhat greater in the year after, than in the year before, admission to the program.

**Table 2. Employment record of 157 patients for 1 year before admission and 223 patients for 1 year after admission to the Pittsburgh methadone program**

| Work record and cohort | Before admission | | After admission | |
|---|---|---|---|---|
| | Number | Percent | Number | Percent |
| Did not work | 90 | 57.3 | 115 | 51.6 |
| 1st cohort | 21 | 47.7 | 35 | 40.0 |
| 2d cohort | 32 | 57.1 | 40 | 52.6 |
| 3d cohort | 37 | 64.9 | 40 | 51.9 |
| Worked 9 weeks or less | 8 | 5.1 | 12 | 5.4 |
| 1st cohort | 2 | 4.5 | 4 | 5.7 |
| 2d cohort | 4 | 7.1 | 5 | 6.6 |
| 3d cohort | 2 | 3.5 | 3 | 3.9 |
| Worked 10 to 29 weeks | 16 | 10.2 | 50 | 22.4 |
| 1st cohort | 8 | 18.2 | 14 | 20.0 |
| 2d cohort | 3 | 5.4 | 19 | 25.0 |
| 3d cohort | 5 | 8.8 | 17 | 22.1 |
| Worked 30 to 52 weeks | 43 | 27.4 | 46 | 20.6 |
| 1st cohort | 13 | 29.5 | 17 | 24.3 |
| 2d cohort | 17 | 30.7 | 12 | 15.8 |
| 3d cohort | 13 | 22.8 | 17 | 22.1 |
| Total | 157 | .. | 223 | .. |

*Arrests.* Arrest records from the Russell Index are shown in table 3 for the year before and after admission for patients who remained in the program at least 12 months and for those who dropped out before 1 year. Similar calculations were made for the 2 years before and after admission. Average number of arrests per patient was reduced after admission for those who remained in the program, but not for those who dropped out.

## Discussion

The Pittsburgh Black Action Methadone Program experience was quite similar with respect to patient characteristics and response to methadone to that reported by others (*3,8*). Multiple observations have established that heroin addiction is a definable disease with a predictable attack pattern and a predictable response to specific therapy. Innercity black males, unemployed or partially employed and with less than a high school education, are at greatest risk of heroin addiction. Response to methadone treatment is relatively uniform. Positive outcomes are a reasonably high rate of retention in programs, some reduction in

**Table 3. Police arrests of participants before and after admission to the Pittsburgh methadone program**

| Status and cohort | Number of patients | Average arrests per patient | |
|---|---|---|---|
| | | Before | After |
| | 1 year before and after admission | | |
| Dropped out .... | 70 | 0.9 | 0.7 |
| 1st ..... | 27 | .4 | .5 |
| 2d ..... | 22 | .9 | .9 |
| 3d ..... | 21 | 1.4 | .8 |
| Retained in program ... | 230 | .6 | .3 |
| 1st ..... | 73 | .5 | .2 |
| 2d ..... | 78 | .8 | .5 |
| 3d ..... | 79 | .5 | .3 |
| | 2 years before and after admission | | |
| Dropped out .... | 125 | 1.0 | 1.1 |
| 1st ..... | 49 | 0 | 0 |
| 2d ..... | 38 | 1.2 | 1.5 |
| 3d ..... | 38 | .9 | .8 |
| Retained in program ... | 175 | 1.3 | .7 |
| 1st ..... | 51 | 0 | 0 |
| 2d ..... | 62 | 1.3 | .9 |
| 3d ..... | 62 | 1.3 | .5 |

SOURCE: Russell Index (district attorney's office public record of all persons arrested and appearing in court in Allegheny County).

police arrests (presumably reflecting decrease in antisocial acts), and a marked decrease in heroin use. Employment status usually shows little change.

The outcomes of methadone therapy appear understandable. Retention in the program reflects the effectiveness of methadone as a heroin substitute, as does the decrease in heroin use. The decrease in arrests reflects release from the necessity to acquire large sums of money to purchase heroin. The failure of methadone treatment to influence the employment rate is not surprising. Most heroin addicts have never been employed regularly either before or during the time of their addiction. They largely are unemployable because they lack education, job skills, work habits, and motivation to work. It would be unrealistic to expect the administration of a drug to correct these deficiencies. Likewise, given the length of time patients remain active in programs and the "state of the art," it appears unrealistic to expect the social components of the program to achieve a high rate of full employment and socialization.

In this study the patients were admitted at a time when the program's major service was methadone administration. It appeared that favorable outcomes—retention, diminished heroin use, and decreased police arrests—were achieved in an unselected population of heroin addicts volunteering for treatment. The effectiveness of social components—counseling, job training, and rehabilitation—were not evaluated; however, at the time of study, patients in all three cohorts received varying amounts of these services, but these usually were quite limited and infrequent and thus not likely to be effective. It was the authors' impression that methadone chemotherapy was the major determinant of outcomes and that these outcomes were essentially similar to those achieved in more costly programs with greater amounts of counseling, job training, and rehabilitation services and with criteria for patient admission more favorable to outcome.

In considering the feasibility and cost effectiveness of measures to control heroin addiction, it may well be found that the component of methadone programs most responsible for producing diminished heroin use and decreased police arrests is the administration of methadone itself, a technically simple and low-cost activity. If this is so and if money is limited, careful thought should be given before funding costly program components of undemonstrated effectiveness should such expenditures result in an inability to fund basic chemotherapeutic programs for addicts not currently being treated.

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**CLEVELAND, WILLIAM H. (University of Pittsburgh School of Medicine), BOWLES, BRIAN, HICKS, WILLIAM, BURKS, CHARLES, and ROGERS, KENNETH D.: *Outcomes of methadone treatment of 300 innercity addicts. Public Health Reports, Vol. 89, November–December 1974, pp. 563–568.***

Methadone treatment is currently the most common form of heroin addiction therapy in the United States. Social and rehabilitation services such as counseling, job training, and job placement are usual components and account for a major portion of the costs of methadone treatment programs. A freestanding, innercity program, the Pittsburgh Black Action Methadone Program, was evaluated by measuring heroin use, number of arrests, and employment status of the program's first 300 patients during 1 year before and 1 year after enrollment. During the period when these patients were enrolled (August 1968 to September 26, 1970), few applicants were refused; almost the sole criterion for admission was a patient's request for help.

The program had both medical and social service components. A major portion of the medical activities concerned prescription and administration of methadone; social services included patient counseling and referral for social, educational, and vocational rehabilitation. During approximately the first half of the period covered by the study, social services were provided by former addicts without professional training. Later, academically trained counselors as well as ex-addicts gave services. During the entire period, social services were minimal in duration and frequency and of limited quality.

Favorable outcomes (measured by retention in the program, diminished heroin use, and decreased police arrests) were similar in frequency to those reported in more costly programs with greater amounts of counseling, job training, and rehabilitation services and with criteria for patient admission more favorable to outcome.

It was the impression of the authors that methadone, per se, was the major determinant of therapeutic outcome. As such, this service represents a much simpler and lower cost program than many existing ones. Limiting services to provision of methadone may enable programs to expand within economic constraints to treat addicts not now receiving therapy.